

### **REMARKS/ARGUMENTS**

Claims 1-16 are pending in this application. Claims 1-7 and 9-15 are rejected by the Examiner. Claims 8 and 16 are objected to. Claims 1 and 9 have been amended to render in a more precise and clear manner that which Applicants deem to be the inventive subject matter of the application. Claims 6 and 14 have been canceled. The present amendments to the claims find support throughout the original specification as filed. For example, support for the proposition that members of the structures of the invention *may*, but yet do not need to be bonded, may be found, *e.g.*, at page 6, lines 22-24, page 8, lines 11-15 and page 17, lines 13-17 of the application as filed and published. As such, no new matter has been added by this amendment.

An interview between Examiner Kelly and A. Gregory Gibbs, as Applicants' representative, was conducted on December 10, 2009. During the course of the interview, topics of discussion included a review to consider differences between the present invention and the prior art, along with a review of alternate potential claim amendments proposed by Applicants. Applicants appreciate the Examiner's time and thoughtfulness in participating in the interview. Applicants also acknowledge and appreciate the Examiner's determination that claims 8 and 16 present subject matter that would be allowable if appropriately rewritten.

#### **Claim Rejections under 35 U.S.C. § 103(a) over Snelson in view of Barlow**

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Snelson (6,739,937) in view of Barlow (4,271,628) for the reasons set forth in pp. 2-4 of the Office Action.

In response, Applicants note that claim 1 has been amended to clarify and render more precisely that which Applicants deem to be the inventive subject matter of the present disclosure. Applicants respectfully point out that the cited Snelson and Barlow art relate to three-dimensional toy construction kits, comprising (in Snelson) a plurality of elongated rod members of different lengths and a plurality of joining members to bond the rod members together, or comprising (in Barlow) a plurality of connecting member "spokes" linked to and radiating out from a substantially spherical connector member "hub." In Barlow, the spherical connector body "hub," which serves

as a structural focal node and serves to link the flexible rod members of the structure together, is the most indispensable and critical facet of the invention. That is, Barlow never and in no way contemplates the construction of structures without hubs to "bond" the flexible rod members of the structure together. While the Barlow structural members possess the advantage of being flexible in order to accommodate a multiplicity of possible shapes and structures, this also results in a corresponding lack of structural strength and stability, such that the Barlow structures will not maintain their shape without the presence of connector "hub" members to place and bind the rod members in their proper orientations. Similarly, in Snelson, the required inclusion of joining members to hold the structure together is due to the fact that the three-dimensional structures of that disclosure, unlike that of Applicants, are not made for the particular purposes of obtaining superior mechanical strength and stability. Consequently, the Snelson claims do not contemplate structures that lack joining members or otherwise are free from having members being joined or bonded together.

With the present invention, unlike the Snelson and Barlow references, the lengths of the sides of the unit cell in the cellular structure of the present invention must be equal and the lengths of all truss elements are equal. As such, each unit cell possesses similar structure to the Octet or Kagome truss and, as a result, the mechanical properties of the present invention are similarly superior in mechanical strength and stability. If the lengths of the truss elements are not necessarily equal (as per Snelson or Barlow), the cellular structure will not exhibit superior strength, and whether the length of each side is constant and uniform causes a great difference in the mechanical strength of the whole structure, and serves as the determinative factor in providing superior mechanical properties, regardless of loading direction.

Thus, the unit cell of the regular tetrahedron or hexahedron with equilateral sides is an essential element for the superior strength and rigidity of the three-dimensional cellular structure as is first taught with the present invention. The cited Snelson and Barlow art do not disclose that the three-dimensional structure must have the regular tetrahedron or hexahedron structure with

equilateral sides, but merely suggest a method for implementing polyhedrons in a three-dimensional space. Thus, while the structures of the various inventions may seem initially similar in appearance, the essence of these disclosures are actually quite divergent from one another.

In stark contrast to Snelson and to Barlow, the present invention requires a regular tetrahedron or hexahedron structure repeatedly woven from continuous wires. Due to this novel structural aspect of the present invention, the cellular light structure of the present invention possesses a superior strength and rigidity that is provided *even though there is no external fixing member or joining member at the intersection point of the wires bonding them together*.

There is no disclosure in the cited Snelson and Barlow references suggesting that a three-dimensional cellular structure formed by repetition of the regular-tetrahedron unit cells might be stronger or more rigid than other structures. There is also no suggestion or motivation provided by Snelson or Barlow that repetitive mass-production is possible if the three-dimensional cellular structure is woven with continuous wires, further wherein the additional step of applying external bonding at the intersection points (to maintain structural strength and integrity) between wires can be omitted, nor is this present invention a mere obvious variation upon the teachings provided by Snelson and/or Barlow. Rather, the present structures, and the advantages thereof, only become apparent and readily put into practice by those of average skill in the art upon encountering the teachings of the present disclosure.

Finally, Applicants wish to provide reminder that even the goals and purposes behind the present invention and those of the cited Snelson and Barlow prior art references are notably distinct. Snelson and Barlow explicitly relate to toy construction kits for three-dimensional geometrical structures, primarily useful for educational purposes or play. In contrast, the present invention relates to easy-to-fabricate three-dimensional wire-woven cellular light structures having superior strength and rigidity and thus industrially-applicable for engineering in a cost-effective manner. It is clear, when considering the structures, resulting improvements in structural strength, and the central objectives of the current invention as compared to those of Snelson and Barlow, that Applicants offer a novel and non-obvious improvement upon the prior art. Applicants thus

respectfully request that the Examiner reconsider and withdraw the present rejection under 35 U.S.C. § 103(a) and deem claims 1-6 to be in suitable condition for allowance.

**Claim Rejection under 35 U.S.C. §103(a) over Snelson in view of Barlow and in further view of Constantinesco**

Claim 7 is rejected under 35 U.S.C. §103(a) as being unpatentable over Snelson (6,739,937) in view of Barlow (4,271,628) and in further view of Constantinesco (2,677,955) for the reasons set forth in pp. 4-5 of the Office Action.

The Examiner alleges that those skilled in the art could easily carry out the invention of claim 7 relating to manufacturing a reinforced, solid cellular light structure through a combination of the teachings of Snelson, Barlow and Constantinesco. In response, Applicants observe that independent claim 1, which claim 7 is dependent to, has been presently amended so that the present invention provides elements and features that are not present in these prior art disclosures, nor are the innovations offered by the present invention an obvious variation over the prior art. Specifically, the present disclosure allows the user to omit the use of "joining members," "spherical connector members" or other means of fixing or bonding the structural rod members of the invention together. Constantinesco does not address or solve this problem. Rather, the teachings of Constantinesco suggest a way of increasing the internal tensile strength and resistance of a product or structure to rupture, but Constantinesco does not teach or suggest that the structural members need not be fixed or bonded together. In fact, as Constantinesco teaches a means of fixing or bonding a structure throughout a structure's volume, Constantinesco also at least implicitly reinforces the notion that structures of the prior art require some form of bonding or reinforcement between support members as a way to maintain the strength, stability and integrity of the overall structure. Meanwhile, the present invention is able to omit such bonding between structural support members and is more adaptable to the filling-in of internal empty spaces of the structure for purposes other than that of reinforcing structural integrity, *e.g.*, for waterproofing, acoustics, privacy, or myriad other purposes. As these prior art references thus fail to provide the critical innovative structures of the present

invention as a starting point, one of ordinary skill in the art would still lack the teaching, suggestion or motivation to come up with the particular structures and advantageous features described in claim 7, even in view of Snelson, Barlow, and Constantinesco whether considered alone, or considered in combination.

**Claim Rejections under 35 U.S.C. § 103(a) over Snelson in view of Barlow in further view of Constantinesco**

Claims 9-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Snelson in view of Barlow in further view of Constantinesco for the reasons set forth on page 5 of the Office Action.

The Examiner alleges that the methods of claims 9-15 are an obvious method of using the device(s) of rejected claims 1-7. In response, Applicants observe that claim 9 is presently amended to clarify the innovations offered by the present disclosure over the teachings of the prior art. With entry of the present amendment, one of average skill in the art would lack the motivation or suggestion to apply the methods of Constantinesco to the teachings of Snelson and Barlow to result in the present invention as currently recited. Any belief that the prior art teachings render the present invention obvious is likely due to hindsight bias rather than upon any actual or implied teachings presented by a combination of the cited references, even when considered in view of the then-contemporary state of the art.

Applicants reiterate that as Snelson and Barlow emphasize an importance to bonding by joining or connecting structural rod members at intersections to enhance strength and structural stability, a practitioner of average skill in the art would not have the suggestion or motivation to pursue the structures and methods of present invention, particularly without the use of bonding between members, nor would such a practitioner consider such a method or any of the present methods obvious or reasonably expect success in pursuing such methods, even when viewed in combination with the teachings of Constantinesco. Instead, it is only with the present disclosure that one of average skill in the art would recognize and understand the value of using the present methods

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and of producing the presently disclosed structures and readily be able to put the invention into practice.

The Examiner is thus respectfully requested to reconsider and withdraw the rejection of claims 9-15 under 35 U.S.C. § 103 over Snelson and Barlow in view of Constantinesco.

### Summary

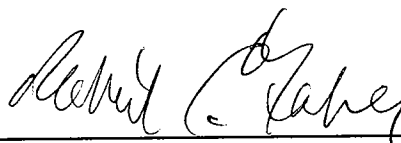
Entry of this Amendment into the file of the application is respectfully requested. The remarks presented above are believed to be sufficient to overcome all of the objections and rejections to the claims of the present application. The Examiner is, therefore, respectfully requested to reconsider and withdraw the subject rejections and to pass the application through to an allowance.

If the Examiner does not agree, however, but believes that an interview would advance the progress of this case, the Examiner is respectfully invited to telephone Applicants' representative at the number below so that an interview may be scheduled.

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SUBMITTED ELECTRONICALLY  
THROUGH THE PATENT AND  
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RCF/AGG:stb

Respectfully submitted,



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